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CASE 4181-0

PATENT

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Forrest L. Collins

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Examiner:

Anthony J. Hadala Art Unit:

Serial No. 09/9926101 Confirmation 7580 Paper

Filed: November 19, 2001

CITATION OF ART

Dear Sir:

Enclosed with this letter are cited references and sheets of PTOL 1449 prepared for the Examiner to consider the cited art. The cited references are discussed below:

United States Patent 5,655,839 issued to Schmidt, et al., August 12, 1997 describes an IR temperature sensor that comprises a sealed housing containing an inert gas atmosphere and enclosing a detector for conversion of heat radiation into an electrical signal, an optical system which images the heat radiation emanating from an object onto the detector, a heat-conducting temperature equalization element which maintains the detector and the optical system at a common temperature, and a temperature sensor which measures the temperature of the temperature equalization element. The sealed housing protects the sensor from the external environment and maintains uniform temperature between the optical system and the sensor.

Further information concerning infrared temperature sensors is found in a brochure entitled Raynger® ST™ that describes ST30 Pro™ Standard and ST30 Pro™ Enhanced non-contact thermometers. The ST30 Pro™ Standard and ST30 Pro™ Enhanced non-contact thermometers are available from Raytek Corporation 1201 Shaffer Road Post Office Box 1820 Santa Cruz, California 95061-1820.

United States Patent 4,362,645 that issued to Hof, et al. December 7, 1982 describes temperature-indicating compositions of matter. United States Patent 4,362,645, in particular describes stable compositions of matter which change color sharply upon a transition from a liquid state to a solid state or from a solid state to a liquid state, which change of state is at substantially a predetermined temperature corresponding to a temperature to be measured.

The constituents of the Hof, et al. compositions of matter comprise: 1. a solvent (I) consisting of a single substance or a mixture of substances and adapted to change from a solid state at substantially a predetermined temperature to a liquid state and 2. an indicator system (II) consisting of one or more substances different from (I), characterized in that (a) (II) is soluble in (I) when the latter is in the liquid phase, and (b) (II) changes color visible to the naked eye when (I) passes from the solid to the liquid phase or from the liquid to the solid phase. Thermometers containing said stable compositions of matter are also disclosed.

United States Patent 4,339,207 also to Hof, et al. which issued July 13, 1982 describes a temperature indicating device is disclosed comprising: (a) a flat or gradually curved heat-conducting carrier having one or more cavities, each substantially filled with a composition of matter; or in the alternative, with (1) a composition of matter which changes from opaque to transparent upon a corresponding change from solid to liquid on top of an (2) indicator means located at the bottom of the cavity; said composition of matter, whether novel or not, being substantially without impurities and containing a substantially spherical void space between the bottom of the cavity; and (b) a transparent cover sheet means in sealing engagement with the heat conducting carrier means overlying and above the cavity, which spherical void space acts to magnify the color change if the novel compositions of matter are present or the presence of an indicator means upon melting of the compositions of matter in the cavity.

The compositions of matter of Hof et al., are further described as changing color sharply upon a transition from a liquid state to a solid state or from a solid state to a

liquid state, which change of state is at substantially a predetermined temperature corresponding to a temperature to be measured.

United States Patent 4,232,552 issued to Hof, et al. November 11, 1980 discloses temperature-indicating compositions of matter. The Hof, et al. compositions Novel and stable compositions of matter are disclosed which change color sharply upon a transition from a liquid state to a solid state or from a solid state to a liquid state, which change of state is at substantially a predetermined temperature corresponding to a temperature to be measured. The constituents of the novel compositions of matter comprise: 1. a solvent (I) consisting of a single substance or a mixture of substances and adapted to change from a solid state at substantially a predetermined temperature to a liquid state and 2. an indicator system (II) consisting of one or more substances different from (I), characterized in that (a) (II) is soluble in (I) when the latter is in the liquid phase, and (b) (II) changes color visible to the naked eye when (I) passes from the solid to the liquid phase or from the liquid to the solid phase. Thermometers containing stable compositions of matter are also disclosed in United States Patent 4,232,552.

Seiden, et al., in United States Patent 5,426,593 issued June 20, 1995 is directed to a device which measures the oxygen component of a beverage gas using a specific oxygen probe, ultrasonic degassing, a special valving technique, and microprocessor based software. The measurement is made in the gaseous state in a two-chamber system.

The device of Seiden, et al., is controlled by an electronic console that is built around a microprocessor which sequences and times the valves, receives the data from the oxygen probe and its accompanying temperature compensation circuit, and displays the data. An alternative method is to use several chambers and one pass. Additional chambers may be used to increase the speed of the test, control interferences, or aid in identifying gases other than the oxygen component. The device may also have an interface piercing head manifold that allows carbon dioxide and oxygen to be tested in the same container and in one preparation. The invention also relates to specific gas

measurements with non-specific type measurements and the general techniques can be applied to environmental problems that involve oxygen demand and respir-ation of bacteria.

United States Patent 6,119,464 issued to Nakayama, et al. on September 19, 2000 describes beverage servers and controlling methods for beverage servers. More particularly, Nakayama, et al. discloses a beverage server comprising a tank containing water serving as a coolant and a coiled beverage duct through which beer or other beverage flows and cooling means fitted to a portion of the wall of the tank so as to rapidly cool and serve beer or other beverage discharged from the storage container. The inner wall of the tank near the portion where the cooling means is fitted is made of a material having a high thermal conductivity, whereas the inner wall of the tank near the beverage duct is made of a material having a low thermal conductivity. A sensor is provided near the beverage duct to obtain information for controlling the cooling means. This simple beverage server assures stable serving of beverage at a suitable temperature. Another sensor is provided near a portion of the tank wall where the cooling means and a controller to controls the action of the cooling means based on the information from the sensors are also provided. The cooling means works at full capacity when one or both of the sensors have detected the melting of the coolant. This eliminates the risk of trouble due to cooling capacity deficiency even after a long interruption of cooling.

Furuhashi, et al., in United States Patent 5,165,569 issued November 24, 1992 recites a keg body for retaining draft beer substantially has adiabatic structure, in which draft beer filled in the keg body is kept cool. A part of the keg body is provided with a face which is not heat-insulated and this face is utilized as a cooling face. In case of necessity, beer is cooled from the outside through the cooling face to keep cool draft beer inside the keg body.

Further information concerning infrared temperature sensors is found in a brochure entitled Raynger® ST™ that describes ST30 Pro™ Standard and ST30 Pro™ Enhanced non-contact thermometers. The ST30 Pro™ Standard and ST30 Pro™

Enhanced non-contact thermometers are available from Raytek Corporation 1201 Shaffer Road Post Office Box 1820 Santa Cruz, California 95061-1820.

The Examiner is also directed to Hammerhead Products Accu-Level propane tank gauge. Hammerhead Products is located at 1720-22 Street Santa Monica, California 90404. A product label from the Accu-Level propane tank gauge is enclosed.

Brown et al., In United States Patent 6,260,414 issued July, 17, 2001 a cholesteric liquid crystal fluid level indicator that determines the level of a cooled liquid, such as beer, in a closed, opaque keg when placed in thermal contact with the exterior surface of the keg, by producing a color change that is a function of the liquid temperature when the liquid is within a predetermined temperature range, the indicator comprises a multiple level strip having a top transparent layer, liquid crystal layer, a black background layer and an attachment layer employing a protected adhesive on its bottom surface for removably attaching the strip to the keg. The Brown et al., patent is stated to employ a heat conducting adhesive on the attachment layer and for securing certain layers in the strip, such as the liquid crystal layer.

United States Patent 3,696,675, issued to Gilmour October 10, 1972, discloses a method and means for determining liquid level in a container comprising an elongated strip of material coated or imbedded with cholesteric liquid crystals which exhibit color changes with changes in temperature. The term liquid is used loosely in Gilmour. Gilmour is specifically designed for propane gas and thus operates in the mesomorphic range between 59.degree. F. and 122.degree. F. Gilmour also requires a temperature change to be induced on the exterior surface wall of the container by applying heated or chilled water or utilizing an electrical heating element.

United States Patent application 4,246,785, issued to Sellers et. al., January 27, 1981 describes the effectiveness of thermal insulation of barriers, such as walls, floors, or ceilings of a residence, is assessed by measuring the effective values of insulation or R values, of thermal barriers. Suitable devices and procedures for utilizing such devices are provided. The R values so measured can be compared with those suggested for economic insulation in such sources as government publications to determine the

desirability of augmenting existing insulation. The device comprises a holder and a temperature sensor and indicator means supported on a support slidably mounted in the holder. In one embodiment, a single device combines measurement of thermal insulation and comparison with suggested values for economic insulation. A direct measurement of whether installed insulation is adequate is thus provided.

United States Patent application 4,302,971 issued to Luk, December 1, 1981, describes a liquid crystal temperature indicator measures human body temperatures. The temperature indicator comprises a generally planar member for retention against an outer surface of a body. A number of deposits of liquid crystals, each activatable within a predetermined temperature range to be measured, are arranged behind temperature-indicating numerals. At a temperature within the predetermined temperature range, at least one of the deposits emits or reflects visible radiation to make corresponding numerals visible for indicating the surface temperature of the body. However, numerals are calibrated to the corresponding oral temperatures. A non-water soluble lacquer coating protects the deposits from moisture or humidity.

United States Patent 4,854,160 issued to Glatt, August 8, 1989 describes a temperature and humidity indicator is provided by a plurality of liquid crystals sensitive to different temperatures which form a graduated scale and a plurality of paper segments impregnated with an inorganic salt sensitive to humidity forming a second graduated scale on a supporting sheet. The crystals change color with temperature and the paper segments change color with humidity. The two scales provide the vertical and horizontal axes of a table of equilibrium relative humidity and ambient relative humidity values for paper sheets or rolls to be printed on and the air surrounding the sheets. Readings are taken from the table to determine the differences in humidity between the air and paper. A second parameter table indicates ranges of differences which should not be exceeded under various printing conditions in order to prevent the occurrence of printing problems.

United States patent 5,323,652 issued to Parker, June 28, 1994 describes a thermochromic level indicator for determining the level of a material inside a container

includes a temperature responsive strip including at least two thermochromic materials of different opacities and transition temperatures, the thermochromic materials with greater opacity having relatively lower transition temperatures than the thermochromic materials with lesser opacities. Other accurate thermochromic level indicators are also disclosed.

United States patent 5,686,153 issued to Henyderickx et al., November 11, 1997 relates to an optical temperature indicator. The indicator comprises an optically active layer of a transparent polymeric material in which liquid-crystalline material is dispersed. The molecules of the liquid-crystalline material form part of a polymeric structure via covalent bonds, for example as side-chain groups. The polymeric structure is preferably based on a siloxane. Such an indicator exhibits a good mechanical stability, while the opacity is preserved for a long period of time.

United States patent 5,385,044, issued to Thomas et. al, January 31, 1995, describes an indicator for determining the level of contents in an opaque, plastic container The container is filled with a solid chemical, such as a detergent. A spray of warm or hot water impinges upon the eroding surface of the solid chemical to produce a chemical solution. The container is provided with a thermo-chromatic strip for detecting the level of solid chemical within the plastic capsule. A method of dispensing a solid chemical and a dispensing container are also disclosed.

United States patent 5,707,590 issued to Thomas et. al., January 13, 1998 describes an indicator for determining the level of contents in an opaque, plastic container. The container is filled with a solid chemical, such as a detergent. A spray of warm or hot water impinges upon the eroding surface f the solid chemical to produce a chemical solution. The container is provided with a thermo-chromatic strip or thermo-chromatic surface (41) for detecting the level of solid chemical (11) within the plastic capsule (10). A method of manufacturing the dispensing container (10, 30, 40) is also disclosed.

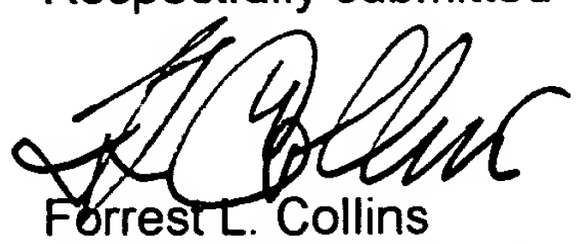
United States patent 5,738,442 issued to Paron et. al., April 14, 1998 describes a wine thermometer for adhesive application to a wine bottle to determine wine

temperature therein comprising an adhesive backed flexible plastic substrate having a liquid crystal temperature panel on the substrate, a temperature scale adjacent the panel and quick reference category ranges adjacent the panel whereby the color of a small band of the panel indicates the temperature of the panel substrate, bottle and wine therein. Contrasting colors of bands above and below the small band indicate a 1.degree. or 2.degree. difference in temperature and at the ends of the panel indicate a temperature 1.degree. to 2.degree. beyond the printed temperature at the panel end. In the preferred embodiment a small band indicates the panel temperature by turning a green color. The band thereabove exhibits a tan color and the band therebelow becomes a blue color. Bands further away remain black. When the panel temperature exceeds the printed temperature of the highest band by 1 degree or 2 degrees, the highest band exhibits the blue color. If the panel temperature further increases, the highest band will return to black. In a similar manner the lowest band will exhibit the tan color as the panel temperature decreases 1 or 2 degrees below the printed temperature of the lowest band with the lowest band returning to black as the panel temperature further decreases.

United States patent 6,012,411, issued to Hochbrueckner, November 11, 2000 describes a flexible environmental protective cover for a compressed gas transport tank, having a cylindrical body, an upwardly extending valve, and a valve protection structure having a handle opening, the cover comprising a generally cylindrical drape portion; an upwardly extending enveloping portion, adapted to surround the upper valve protection structure of the tank and having an opening corresponding the handle opening, contiguous with the cylindrical drape portion; and an upper portion, inside the upwardly extending enveloping portion, having an aperture corresponding to a location of the upwardly extending valve, and allowing the valve to extend therethrough. The cover may include a business card holder flap, as well as an optional sensor system for determining liquid level in the tank and hazardous environmental gas levels.

Consideration of each reference cited herein is requested. Should questions concerning this application arise they may be directed to the Applicant's attorney at the number given on this page.

Respectfully submitted



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